＜論　文＞

Assessing the Defence Industries of Second Tier Arms Producers: Japan and Sweden

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This article analyses the defence industry in the second tier arms producer states by using Japan and Sweden as case studies. Arms production in the second tier is often inefficient and poorly run, though some of them managed to remain profitable. Why some second tier defence industries are able to remain profitable and successful despite those challenges? This research argues that the inclusion of non-arms and dual-use technology sales is crucial to maintain a profitable industry, especially when foreign arms sales face heavy confinement. Furthermore, giving up autarky and establishing an independent political relations with first tier arms manufacturers are imperative to maintain profitable defence industries. Second tier defence manufacturers are often caught in the ambition to achieve autarky and focus to sell cutting edge arms which definitely require a lot of funds. Moreover, an independent political relation with top tier defence industries countries can guarantee freedom in developing the industry as well as executing foreign arms sales. This paper starts by discussing the analytical framework of the method to maintain defence industry in the second tier states. The argument of this paper is then assessed against the case of the defense industries in Japan and Sweden. The paper then concludes with the implication of the findings for policy making in second tier defence industry world.

Keywords：Defence Industry, Japan, Sweden

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1. Introduction

Peter Dombrowski and Eugene Gholz argued military transformation efforts pretty much rely on the performance of the defence industrial base. Furthermore, working on R&D to develop specific weapon systems or equipment is a crucial contribution that the defence industry can make to foster military transformation (Dombrowski & Gholz, 2006, pp. 16, 20). The argument from Dombrowksi and Gholz supported Paul Kennedy's thesis which noted the maintenance of powerful armed forces depends on the defence industrialization process that is upheld by capabilities in technology and the manufacturing process (Kennedy, 1989). Even though defence transformation could be maintained by arms procurement through the global arms trade, the security-driven aspiration for self-sufficiency in arms procurement is a primary reason in building up the defence industry (Bitzinger, 2003, p. 11). Additionally, dependency upon foreign resources for defence systems could create vulnerability, particularly in times of conflict and war (Kennedy, 1989, p. 7). The fear of restraints from arms suppliers incline states towards establishing their own defense industries.

Richard Bitzinger described second tier countries as industrialized countries possessing small and/or bounded but often quite sophisticated defence industries; developing or newly industrialized countries possessing modest military-industrial complexes; and developing states with large, broad-based defence industries but still lacking the independent research and development (R&D) and industrial capacities to develop and produce highly sophisticated conventional arms (Bitzinger, 2009, p. 2). Bitzinger divided the defence industry into three tiers. This first tier consists of the critical innovators at the technological frontier of arms production and dominant players whose actions will have profound impacts on the rest of the global arms industry, for example the United States, Britain, France, Germany and Italy as well as Russia (which inherited Soviet Union's defence industries capability) (Bitzinger, 2015, p. 3). The second tier comprises of adapters and modifiers of advanced military technologies which also are industrialized countries, such as Australia, Canada, the Czech Republic, Norway, Japan, China and Sweden. The third tier constitutes those newly industrialized countries with limited technological capabilities, for instance Egypt, Mexico and Nigeria (Bitzinger, 2009, p. 2).

Second tier defence-industrial-countries also see the defence industry as an instrument to drive their economic development and industrialization. These countries pursue parallel strategies of 'security and development'. Second tier states aim to build their heavy

industry and technology sector, while, at the same time, they pursue self-sufficiency in arms production (Bitzinger, 2003, p. 13). Nationalism, status and prestige also influence heavily defence industrialization in those countries. The ability to establish an independent defence industry is seen as an indication of great powers status (Bitzinger, 2003, p. 15). Therefore, acquiring an independent and sophisticated defence industry is prestigious for states.

However, some impediments occur in second tier defence-industrial-countries. Arms production in many second-tier states is often inefficient and poorly run, although many of them also manage to remain profitable. Arms productions is inefficient and rarely cost-effective as this form of manufacturing is mainly based on domestic requirements. These arms for domestic demand have been characterized as small in number and inefficient in production, but high in production cost. Moreover, the industrial management styles tend to be rigidly hierarchical, bureaucratic and risk-averse (Bitzinger, 2003, pp. 29-30).

Nevertheless, some second tier countries are able to maintain fruitful defence industries despite the abovementioned shortcomings. Why some second tier defence industries are able to remain profitable and successful despite those challenges? This paper argues that the inclusion of non-arms and dual-use technology sales is crucial to maintain a profitable industry, especially when foreign arms sales face heavy confinement. Furthermore, giving up autarky and establishing an independent political relations with first tier arms manufacturers are imperative to maintain profitable defence industries.

This paper utilizes Japan and Sweden as case studies as these two second tier arms producing countries' experiences show different characteristics and outcomes. The 'Peace Constitution' and self-imposed arms export ban gave Japan severe restrictions on its foreign arms sales. Meanwhile, Sweden did not face such restrictions, though its neutral stance during World War II meant the country had limited choices in selling its defence products abroad. The two countries defence companies are often listed among top tier defence manufacturer countries, especially Japan's Mitsubishi Heavy Industries and Sweden's Saab. Furthermore, the two countries established defence industries which deeply influenced by World War II, both in terms of the circumstances and outcomes. Initially, Japan's 'Peace Consitution' limited the country's industry only for earning foreign exchange but could not be used to produce arms. However, the Cold War, and particularly the Korean War, subtly shifted these limitations (Samuels, 1994, p. 132). Nonetheless, the introduction of Japan's Policies on the Control of Arms Exports, which ended in 2014, prohibited sales to communist bloc countries, states under United Nations sanctions, and

nations in armed conflict (MOFA, n.d.; Fackler, 2014).

This paper starts by discussing the analytical framework of the methods used to maintain the defence industry in the second tier arms producer states. The core argument of this study is then assessed against the case of defense industry in Sweden and Japan. The paper then concludes with the implication of the findings to the policy making in second tier defence industry world.

2. Defence Industry in second Tier Arms Producers

2.1. Second Tier Arms Producers Characteristics

The end of the Cold War put the defence industry world into difficult circumstances. It produced a massive decline in global defence spending due to the deteriorating chances of conflicts in a global scale taking place. The down turn of the threat from the communist countries forced many states to reconsider their high military budgets. Having no imminent threat from the communist camp made many countries feel it was unnecessary to maintain significant defence budget and large military platforms. From the year 1989 until 1999, global defence budgets were reduced by nearly 35 percent (Bitzinger, 2009, p. 3).

As the dynamics of global defence spending heavily influenced the defence industry sector, the impact of budget cuts in the 1990s was undeniable. Defence budget austerity in the 1990s gave a heavy blow to the global defence industry as many of the states with leading military capabilities lost their appetite to enhance military power. With a few dollars in the market to catch, defence companies adapted a new strategy in order to survive this condition. Circumstances compelled these firms to engage in major rationalization and consolidation efforts. Further, the quantity of arms producers heavily contracted as defence companies either merged or purchased the military assets of the other corporations. As a result, mega defence firms emerged in that period. [1)]

Despite this precarious situation, the end of the Cold War lifted the ideological barrier in the arms trade. Defence firms were able to sell their products to the entire world, though sanctions and ethical concerns still limit the sales. Consequently, overseas sales are no longer a supplemental form of income. Overseas sales become increasingly vital to the longevity and stabilization of the defence industrial base (Bitzinger, 2009, p. 5). [2)] This opportunity provided crucial breathing space for the defence industries in the era of defence budget austerity.

All these conditions affected how defence industry operated nowadays. Meanwhile, the

developing countries faced the same circumstances as developed countries. However, research at SIPRI (Stockholm International Peace Research Institute) in the 1980s showed that the arms production capacity in developing countries would be inadequate to permit self-sufficiency or create competition for the developed world (Dunne, 2009, p. 30). The defence industries in developing countries are mostly made up of adapters and modifiers, or the second tier arms producers. Nevertheless, not all of the second tier arms producers are from developing countries, and some of them are developed countries (Dunne, 2009, p. 30).

Industrial capabilities and resources become another form of obstacle for the defence industry in developing countries. These problems are manifested in program delays, escalating costs, technological compromises and the abortive nature of many projects. As an effect, achieving sustainability and autonomy in the defence-industry seems difficult for developing countries. Despite all of these problems, defence industrialization helps the improvement of more advanced military capabilities in some developing states (Boutin, 2009). Developing countries keep their defence industry because the existence of these industries is primarily driven by national security reasons. These states are afraid of the political implications of relying too much on foreign arms producers (Boutin, 2009, p. 229). As noted before, the dependency on foreign arms suppliers could provide undesirable vulnerability to the developing states military capabilities, especially in times of conflict (Bitzinger, 2009, p. 7).

Besides the above-mentioned situation, second tier arms producers also utilize defence industry as a drive for economic development and industrialization. Arms production was also seen as influencing the development and modernization of other sectors of the national industry, such as machine tools and shipbuilding. Likewise, second tiers arms producers see the improvement in industrialization and technology capability as a way to stimulate the development of domestic arms-manufacturing capabilities, building up general skills and know-how, and providing lead-in support or equipment for arms production (Bitzinger, 2009, pp. 13-14).

Second tier arms manufacturer countries view their arms production as a way to provide other economic benefits as well. They believe the defence industry could function as part of import-substitution strategy. The strategy defines that instead of sending capital to overseas via arms imports, the developing states can use their own arms production to create jobs, balance trade imbalances and protect foreign-currency reserves. Meanwhile, by exporting arms, the defence companies in the developing countries play an important part in earning foreign-currency revenues (Bitzinger, 2009, pp. 14-15).

Nationalism, status and prestige play a crucial role in building the defence industry in developing countries. For some developing countries that target becoming one of the global major powers, the defence industry could help them reach the objective (Bitzinger, 2009, p. 15). The production from this industry is seen as adding to prestige; for example, the production of a sophisticated modern jet fighter could enhance the prestige of the manufacturer. One country that has adopted this approach is Indonesia. In the 1990s, Indonesia's airplane company IPTN (*Industri Pesawat Terbang Nusantara*)[3] managed to produce the CN-235 which was shown during the country's 50th Anniversary ceremony, 17 August 1995. However, the Indonesian government at that time heavily subsidized the company as many of its projects were not profitable (Amir, 2007).

2.2. Problems in Second Tier Arms Producers

There are mainly three perennial issues in the second tier arms producers. First, problematic relations with first tier arms producers. Most of defence procurements in second tier arms producers still depend mainly on foreign suppliers. These countries rely on others in several critical fields, such as weapons design, engineering and development assistance, critical components and subsystems, as well as machine tools and production manuals (Bitzinger, 2009, p. 27). The key to solve these technological problems is held by the first tier arm producers. The first tier states apply supply side control to restrict the second tier countries' access to crucial technologies and production equipment (Boutin, 2009, p. 234). This situation can prevent second tier arms producers to climbing up to the next level of technology development and expanding its foreign arms sales.

Moreover, as the capability of the second tier states can undermine the capacity of established defence-industrial producers to develop and implement effective arms embargoes, technology transfer from the first tier arms manufactures to them unlikely to happen (Boutin, 2009, p. 238). Second tier countries' arms production would give an alternative arms procurement opportunity for the embargoed countries. Being potential alternative arms dealers leads the second tier defence manufacturers to vast opportunities as well as occasionally difficult situations. On the one hand, they can easily seal deals with many groups due to their flexibility compared to the first tier arms producer countries. On the other hand, the status as an alternative arms dealer puts second tier states in difficult situation when making deals with first tier states. The latter will see the former as potential competitors rather than partners and as able to undermine their policy vis-a-vis arm sales to embargoed countries.

Second, the defence industries in second tier countries are rarely cost-effective in production and often poorly run. These second tier countries mainly treat their defence firms as prestigious industries. Thus, it is commonly found that these companies depend heavily upon subsidies and protection from the government (Dunne, 2009, p. 30). Although the subsidies and protection have ensured the second tier defence industries survivability, this dependency has proven vulnerable. Unexpected economic shocks can easily cause the collapse of such companies. The Asian financial crisis in 1997 dealt catastrophic damages to many Asian States' local defence companies, for example Indonesia reallocated most of the funding for its strategic industries to other crucial sectors as part of the country's economic recovery plan. Likewise, the global financial crisis in 2008 disturbed the progress of some "mega" defence projects, such as F-35, as well as many procurement plans (Europarl, 2011; Cervera, 2012). Moreover, overlapping investments and excess competition in the defence sector produce over-capacity and poor economic performance in the second tier countries. The oligopolistic nature of defence industries and the secrecy of defence procurements can easily create corruptions and other scandals (Safitri, 2016, p. 78), particularly if the military-industrial complex is serving a particular group's interests rather than public (Hughes, 2009, p. 69).

Third, second tier arms producers' domestic oriented production is another obstacle for them to gain lucrative profit. Arms production in the second tier arms manufacturers mostly aims to fulfill domestic requirements, which are usually small in number, inefficient in production and high in production costs. As some of these second tier arms producers are new players in this market, they are usually having a hard time to compete with well-established manufacturers largely due to technology gap. This circumstance, especially in terms of military innovation and cutting edge modern technology, appeared because of the funding availability (Bitzinger, Raska, Koh, & Wong, 2014, p. 202). Nonetheless, the inability to compete in international market is not merely due to technical issue, other factors, such as political and ethical reasons, also contribute to this difficulty.

2.3. Foreseeing the Future of second Tier Arms Producers

There are several ways to solve the problems in the second tier countries. Dunne noted that producing small arms and relatively unsophisticated weapon systems is a reachable objective compared to producing large advance weapon systems in the case of second tier states (Dunne, 2009, p. 30). Thus, Kenneth Boutin suggested limited defence industrialization. Boutin suggested that developing countries focus on the production of

basic weapon systems (Boutin, 2009, p. 236). By doing this, those countries can utilize the limited funding most efficiently and with a larger chance of gaining bigger profit margins as no sophisticated R&D required.

Meanwhile, Bitzinger argued for a more comprehensive solution for second tier states' problems. The first solution is, *quitting the defence business*; a country may choose to abandon all defence productions and procure from foreign arms manufacturers. The second solution is, *rationalizing and consolidating defence operations*; a country may continue the defence industry by lowering their production for cutting edge defence products and opting for less complex products. The third option is *diversification*; it can be achieved by converting some of its arms production capacity to non-military work. The fourth choice consists of *leveraging dual-use technologies*; by adapting dual-use civilian technologies to meet military needs. The fifth solution is *increasing arms exports*; compensating for small domestic demand by expanding overseas sales. Finally the last method is *globalization*; a country may choose to maintain its defence industry by expanding its participation in international arms production activities (Bitzinger, 2003, p. 40).

This paper does not rejecting all of these arguments. Instead, it adds to those arguments by proposing that establishing an independent political relations with first tier states is also crucial for the second tier arms producer states to maintain profitable defence industries. The second tier countries are potential competitors for the first tier states. Therefore, it is possible for the first tier countries to use their political relations with the second tier producers as a tool to protect their defence industry. Those first tier countries can easily impose political pressure on the second tier states on arms deals to give benefits to the former. In fact, SIPRI (Stockholm International Peace Research Institute), Desmond Ball and Boutin argued that arms have become an instrument of influence, especially for the hegemonic power (Ball, 1993-94; Boutin, 2009, p. 239). Political dependency on the first tier states affects the defence industries of second tier states. To some extent, second tier states arms production capabilities would reduce the first tier states' influence on some countries, especially on embargoed states, since the second tier states provide alternative arms markets. As a result, the first tier states have the opportunity to exploit the second tier states' political dependency to the first tier states in order to protect the latter defence industry.

3. Case Study: Japan and Sweden

Both Japanese and Swedish defence firms are often highly ranked among global defence manufacturer countries, particularly Japan's Mitsubishi Heavy Industries and Sweden's Saab. Following the end of World War II, the 'Peace Constitution' and self-imposed arms export ban gave Japan severe restrictions on foreign arms sales. Even though Sweden did not experience such constraints, its neutrality during the World War II resulted in limited options for foreign arms trading. Unlike Sweden, Japan's relations with the US often created profuse dilemmas and accrued some limitations on the development of Japan's defence industry. Furthermore, a number of corruption cases in Japan reveals an inefficient bureaucratic system that potentially undermines the defence industry. Meanwhile, Sweden is well known as the most successful second tier arms producer. The country adopted the 'armed neutrality' concept in running their defence and security policy during the Cold War and World War II. Although Sweden and its defence companies have been pressured through international arms collaboration efforts to forgo this neutrality principle, they have managed to maintain their doctrine and prosper.

3.1. Japan's Defence Industry: An Immolation of Pacifism

Though Japanese defence companies are often listed in the top rank of global defence firms, the country's defence industries did not escape from the perennial issues of second tier arms producers, such as domestic oriented production, political pressure from first tier countries and inefficient bureaucracies. This paper identifies three major obstacles for Japan's defence industries, namely anti-militaristic principles and arms export ban (1967-2014), US-Japan relations, and corruption scandals in the country's Ministry of Defence. The following subsections will discuss these obstacles. Despite those issues, two Japanese top defence companies managed to remain profitable, though by relying on non-arms sector sales, primarily through dual-use technology products (Taylor, 1993, p. 21).

3.1.1. Anti-Militaristic Principles and Arms Export Ban

In the post-war period, Japanese arms procurement was based primarily on two principles: indigenization (*kokusan-ka*) and anti-militarism (Williams, 2010, p. 78). The situation was resulted from the replacement of Japan's constitution. Defeat in World War II forced Japan to include anti-militaristic principles in its constitution. The Japanese first constitution was introduced on 11 February 1889, the Meiji Constitution. This constitution

was granted by Emperor Meiji. In the pre-war period, Japan maintained a powerful military establishment. Thus, the country was affected by the 'militarism of the mind', with a body politic officially centered on the Emperor System and nationalistic as well as militaristic education (Hughes, 2009, p. 21).

However, this circumstance was compelled to change as the Japanese surrendered to the Allies in World War II. In the post-war era, Japan was forced to become a fully demilitarized state. The Allied Occupation replaced the Meiji Constitution with the 1947 Constitution (Watanabe, 1993, p. 36). The framework is written in the Chapter 2, Article 9, 'The Renunciation of War' and reads as follows (Hughes, 2009, p. 22):

> *Aspiring sincerely to an international peace based on justice and order, the Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as means of settling international disputes. In order to accomplish the aim of the preceding paragraph, land, sea, and air forces, as well as other war potential, will never be maintained. The right of belligerency of the state will not be recognized.*

Japan implemented the self-imposed arms export ban in 1967 a policy which prohibited weapon sales to communist bloc nations, states under UN sanction, and countries in armed conflict (MOFA, n.d.). Although the ban initially only forbade to the abovementioned categories, it actually evolved into a full-scale arms sales ban, with the exception of technology transfers to the US (Pollmann, 2015) The adoption of these principles aimed at reinforcing the defensive nature of JSDF which was minimizing its power projection capability (Tang, 2013, p. 202). Besides that, this export ban prevented Japan from making notable international collaboration efforts regarding defence technology development and made the country's arms industries depend completely on Japanese Defence Agency (JDA) orders.

3.1.2. US-Japan Relations

The United States plays a big role in Japan's defence industry. Although it has imposed restrictions, the United States has also proposed a number of cooperative defence projects with Japan. For instance, the relationship between Japan and United States defence firms has been institutionalized through the establishment of the USA-Japan Industry Forum for Security Co-operation (IFSEC) in 1997 (Williams, 2010, p. 80). A study from Shio Ando in 2015 showed that between 1975 and 2009, Japan acted as a follower of the United States in the context of their defence and security pact when it comes to defence production (Ando,

2015).

In its defence relations with the United States, Japan mainly supports Washington by supplying facilities, logistic's supports, and host nation support (Morimoto, 2008). In return Japan is promised a secure environment around the country under the United States' Far East regional defence policy (Ando, 2015). During the Cold War era, the United States' nuclear umbrella and extended deterrence become crucial guarantees for regional stability in the Asia Pacific which heavily benefited Japan in terms of security. The end of the Cold War and the rise of China nonetheless posited new challenges to the relation between Tokyo and Washington.

The United States has maintained its control over the defence industry in Japan since the Cold War era. The Pentagon and White House are worried about Japan's arms industry potential future. There will be a possibility that US defence companies will compete with the Japanese both in Japan's domestic market or global market. The case of the Fighter Support Experimental (FSX) showed an example of this complicated issue (Lorell, 1996). The suspension of US technology transfer was demonstrated in the case of the FSX. Although both countries were engaged in this cooperation, the United States was reluctant to transfer its technology to Japan, particularly the software (Ikegami-Anderson, 1998, p. 162). The trade imbalance between the two countries and technology transfers also became a serious issue in Japan-US defence industry relations from the 1970s onwards (Edgar & Haglund, 1993, p. 155).

3.1.3. Corruption and Reform in the Ministry of Defence

The rise of China and the North Korea nuclear threat have the potential to compromise Japan's security environment. The Japanese government proposed a reform programme of the Ministry of Defence (MOD) in order to respond to the new dynamics. Several corruption scandals also triggered the reform in Japan's MOD (Williams, 2010, p. 78).

The corruption scandals involving the MOD were deeply connected to the nature of the defence market in Japan. The oligopolistic nature of defence procurement and the pattern of politico-bureaucratic-industrial collusion in Japan appeared as the causes of the corruption scandals, for example, NEC inflated defence contracts in a scandal in 1998 and the MOD suffered a bribery scandal in 2007 which was related to the purchase of five General aircraft engines purchase in 2005 (WSJ, 1998; Guardian, 2007; Williams, 2010, p. 86).

In addition, Ron Matthews explained that the absence of checks and balances, audits,

and specialist procurement personnel within the Japanese Defence Agency (JDA)—which became the MOD in 2007—permitted the existence of a high-cost environment and corruption (Matthews, 2002, p. 47). The decisions for the arms procurement in Japan are often derived from the power relations among the actors involved, such as bureaucrats and politicians. These influential actors make informal bargains and compromises in the arms procurement business (Ikegami-Anderson, 1998, p. 172).

Consequently, the corruption scandals damaged the reputation of the Japanese Ministry of Defence and arms manufacturers. Further, these scandals created questions to the capability of Ministry of Defence as Japan's primary national security policy agency. The corruption scandals also diminished mounting pressures for a relaxation of arms export restrictions (Williams, 2010, p. 89), though the ban was finally lifted in 2014. SIPRI noted that costs of corruption in arms procurements are not only financial, but are also weakening of the country's ability to defend itself. Thus, they can undermine the defence transformation in that particular country (SIPRI, 2011, p. 26).

3.1.4. The Current State of the Arms Industry in Japan

The implications of article 9 and the arms export ban made Japan's defence industry concentrate primarily on the domestic rather than international market. Furthermore, the main revenue of defence firms in Japan is not from the arms trade. For example, Japan's largest arms manufacturer, Mitsubishi Heavy Industries (MHI), earned just 9 percent of its total income from military sales in 2006. On the contrary, Lockheed Martin and Boeing received 90% and 50 % of their earnings from arms respectively (Williams, 2010, p. 80)).

Furthermore, the limited market caused some firms to give up their defence businesses. For instance, Nissan Automobiles sold its aerospace business to Ishikawajima-Harima Heavy Industries (IHI) in July 2000, and Toyo Communication Equipment sold its defence division to NEC in May 2004. Meanwhile, IHI and Sumitomo Heavy Industries released their shipbuilding and offshore businesses to create IHI Marine United. The same path was also taken by NKK and Hitachi Shipbuilding, when they merged their shipbuilding operations with the establishment of Universal Shipbuilding (Williams, 2010, p. 83).

Though some companies had given up their defence businesses, other Japan defence firms, such as Mitsubishi Heavy Industries (MHI) and Kawasaki Heavy Industries (KHI) managed to keep their activities profitable. In 2014, MHI gained 1,042 million US$ profit while KHI 487 million US$ based on SIPRI database (See Figure 1). MHI's profit even passed France's Thales which gained 745 million US$ and almost levelled United

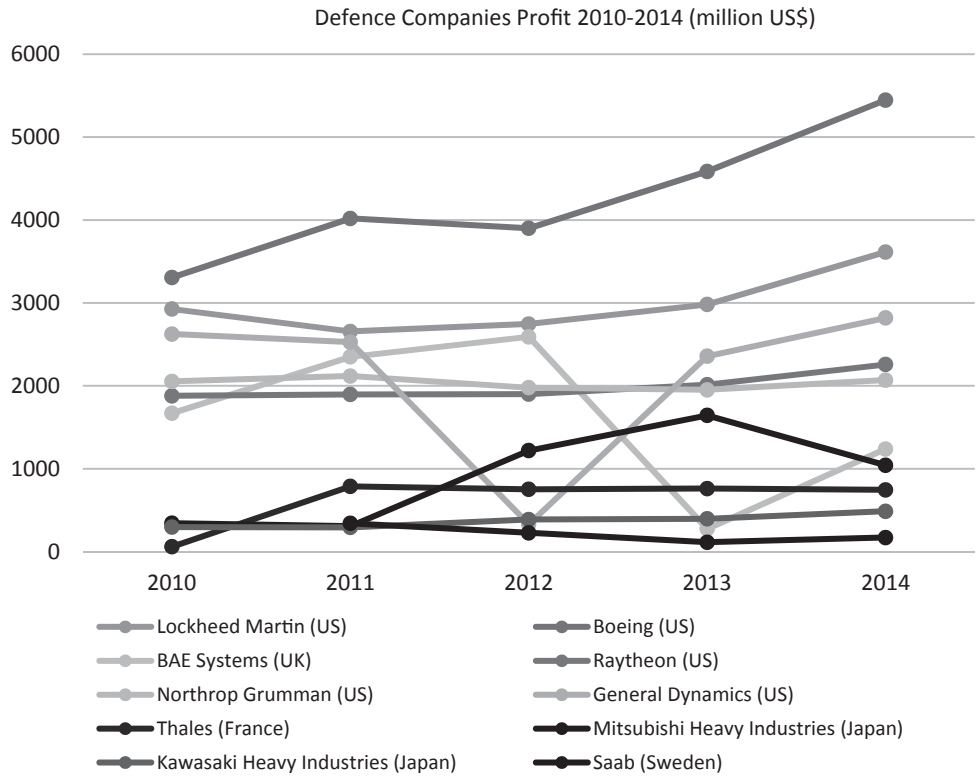

Figure 1: Defence Companies Profit 2010-2014 (SIPRI)

Kingdom's BAE Systems (1,238 million US$). However, MHI's percentage of arms sales is only 10% from its total sales while KHI 15% in 2014 and these numbers are still far behind Lockheed Martin (82%), BAE Systems (94%), and even Saab (79%). Based on this fact, Japanese defence firms seem not to prioritize defence products compared to other countries' companies. Furthermore, the removal of the arms export ban in 2014 does not guarantee significant increasing in terms of foreign arms sales for Japan. Sophisticated products alone are insufficient to win the already over-crowded global arms market. Non-economic elements often play a larger role in winning arms deals, such as the products being battle-proven, after-sales support, and political leverage, in which Japan still needs to improve (Bitzinger, 2016b). Japan's 2016 failed submarine deal with Australia is an example how these non-economic elements influence arms trade (Gady, 2016; Simpson, 2016).

3.2. Sweden: Breaching into the Elite

Swedish defence firms have always been included in the top ranks of European defence

companies, notably Saab. Swedish arm manufacturers are also involved in a number of European arms production collaboration, such as *Meteor* (advance air-to-air missiles), *Neuron UCAV* (unmanned combat systems) and *Taurus* (Standoff precision-guided weapons) (Bitzinger, 2009, p. 183). The country's defence industries are somewhat free from perennial issues that are usually experienced by the second tier defence arms producers. Compared to Japan, Sweden has relatively independent political relations with first tier arms producers, especially the United States. Sweden also acknowledges that autarky in its armaments production is no longer possible (Bitzinger, 2003, p. 33). Sweden has opted to integrate its national defence companies into the global arms chain rather than pursuing autarky fanatically and depending on domestic sales.

3.2.1. Swedish Defence Industries before the End of the Cold War

Since the 19th century, and particularly in the Cold War, Sweden adopts an 'armed neutrality' policy. Swedish government also maintained this policy during World War II. This 'armed neutrality' protocol in the 1920s made the country unable to import weapons for its national defence requirements. In order to solve this problem, Sweden built its own defence industry. The Swedish government managed to keep its non-aligned position during the Cold War without sacrificing its defence needs (Hagelin, 2010, p. 286).

Moreover, Swedish non-aligned policy demanded self-sufficient capabilities from its defence companies. At the beginning of the 20th century, Karlskronavaret (naval surface vessels and submarines) and Bofors (artillery systems) were two top Swedish defence firms. During World War II, Sweden was cut off from foreign imports due to its neutrality. However, Swedish defence manufactures succeeded in overcoming this barrier as its defence industries managed to meet domestic requests.

The Swedish government also considered nuclear weapons in order to strengthen its military capabilities. Nevertheless, the decision was over-ruled by the Swedish government as it believed starting a nuclear weapons programme would make their country vulnerable to military attacks from other states. Furthermore, Sweden was afraid that acquiring nuclear weapons will undermine their neutral reputation (Arnett, 1998, p. 38).

Nonetheless, in the mid-1970s, Sweden's high dependence expenditure became a subject of domestic debate, since the country at the same time desperately needed a large amount of funding for other priorities, particularly education and social needs. Moreover, a United Nations' study in 1981 suggested a positive correlation between disarmament and economic development. The Swedish government in the end followed the path to reduce its military

expenditure. As a result, domestic military market began to shrink and Sweden's defence firms started their transformation process through mergers and acquisitions (Hagelin, 2010, p. 287).

Following the decision, Swedish arm manufacturers started to look for other opportunities through overseas sales. Nevertheless, it created a great dilemma for the Swedish government, since the scope for international military cooperation was limited to R & D cooperation with European neutrals and the Nordic countries. Moreover, the end of the Cold War presented a more challenging situation for Sweden's defence industry policy. In the post-Cold War era, Sweden implemented a security policy to defend against armed attacks of any sort. To achieve this goal, the Swedish armed forces need to be flexible, versatile and 'network-enabled' (Hagelin, 2010, p. 287). This new warfare concept of network centric militaries demanded Swedish arms manufactures to update their technological capabilities.

3.2.2. Swedish Defence Industries after the Cold War

Like any other defence industries, the end of the Cold War had a significant impact on Sweden's arms production. Since the early 1990s, Sweden has been restructuring its arms industry. A number of Sweden's state-owned ordnance, shipbuilding, electronics and aerospace companies were merged to form a new firm, Celsius Industries. This new company is responsible for half of all armaments production in Sweden (Bitzinger, 2003, p. 34).

Moreover, Swedish arms manufacturers have gone beyond the significant rationalization of the 1990s. In the period of 1987 to 1998, workers in the defence-related sector decreased from 27,000 to 14,500 workers. Celcius has shrunk by about 25%; Bofors cut 3,500 jobs, or almost 60% of the firm's workforce. Meanwhile, the same conditions applied to Saab and Volvo Aero. Saab has decreased by nearly 20%, while Volvo Aero reduced from 1,900 defence-related jobs in 1993 to 450 by 1998 (Bitzinger, 2003, p. 34).

The restructuring of Sweden's military industries consists of three characteristics. First, local defence companies' mergers and acquisitions resulted in an increased concentration of armaments production in fewer defence firms. Second, privatization and internationalization increased during the 1990s and bilateral industrial cooperation increased. Third, industrial aspirations changed from 'strategic' to 'niche-focused', reflecting Sweden's increased willingness to participate in multilateral collaborative projects (Hagelin, 2010, p. 291).

Thus, Swedish defence industries realizes expanding into the overseas arms trade has

turned out to be a better strategy for the industry to survive than solely focusing on domestic market. Sweden, together with France, Germany, Italy, Spain and the United Kingdom, signed a Letter of Intent (LoI) in 1999 to merge their aerospace and defence firms. The signing aimed at restructuring European defence industry and the development of Europe's Security and Defence Policy (ESDP) (Hagelin, 2010, p. 288). Moreover, defence firms in Sweden only focus on a few key sectors. For instance, Saab concentrates on military aircraft, guided weapons, space technology, and information technologies for surveillance, command and control; but left the commercial aircraft business (Bitzinger, 2003, p. 35).

Through the pursuit of niche competences and greater international collaborations, Swedish defence manufacturers retain its military technology ambitions. Nevertheless, they understand international cooperation must be 'combined with measures to safeguard our own competence in strategic areas'. Sweden also implement 'earned workshares' (participation based on demonstrated competencies) rather than *juste retour* (fair return on investment). As a result, Sweden is able to gain technology transfers and ensure their defence industries survivability at the same time (Bitzinger, 2003, p. 37).

4. Conclusion: Leveraging Second Tier Arms Producers: Lessons from Japan and Sweden

Both Japan and Sweden defence firms have been listed regularly among global top rank defence companies and heavily influenced by World War II. Nevertheless, as mentioned earlier, Japan defence industries suffered from inefficiency due to the severe restrictions of the 'Peace Constitution' and self-imposed foreign arms sales ban, corruptions issues, and the country's relations with the US. In agreement with the study from the SIPRI which argues that corruption in arms procurement leads to the weakening of a country's ability to defend itself, the inefficiency bureaucracy in Japan that resulted in corruption also has the potential to undermine the country's defence industry capabilities. Furthermore, Japan's relations with the United States occasionally created obstacles. For example, US political pressure, despite the high cost of indigenization, forced Japan to adopt a hybrid design of F-16 for its home grown Mitsubishi F-2 fighter jet (Bitzinger, 2016a). Despite the abovementioned obstacles, two Japan's largest defence companies managed to keep profitable. This circumstance was possible as Japan's defence manufacturers did not depend heavily on the arms sales sector (See Figure 2).

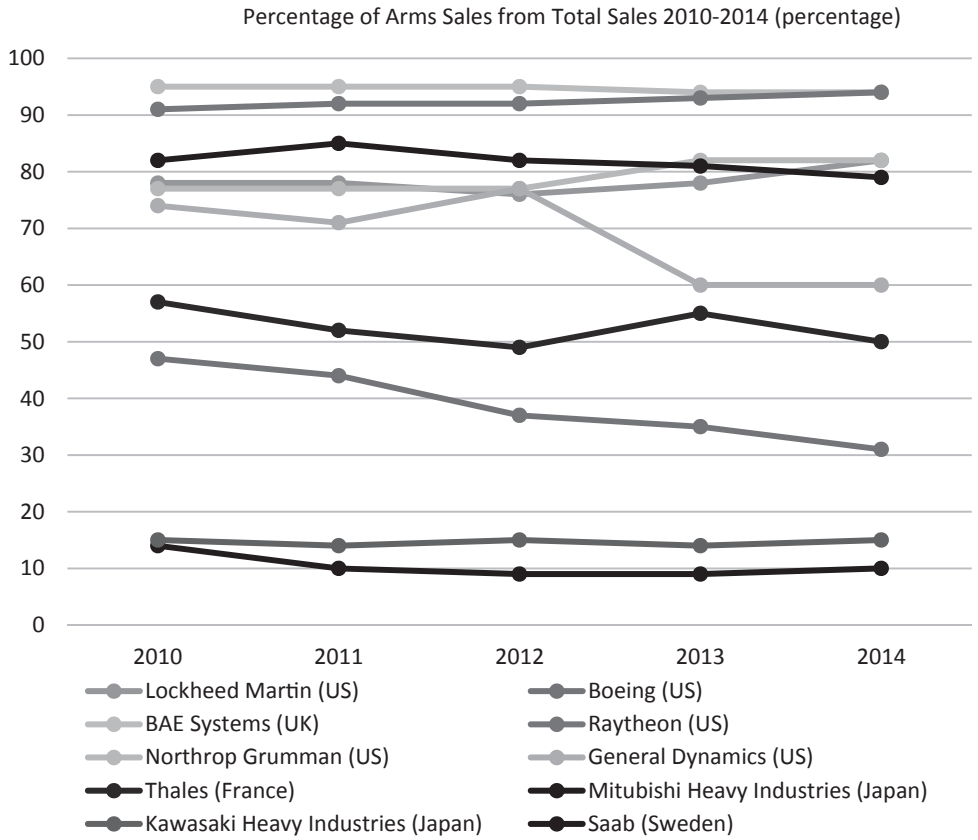

Figure 2: Percentage of Arms Sales from Total Sales 2010-2014 (SIPRI)

Meanwhile, such challenges are relatively absent for Sweden. Although Sweden gave up autarky and opened up to the foreign arms supply chain, the country has succeeded in safeguarding its own competence areas. Moreover, Sweden managed to restructure its defence industry successfully. As a result, Swedish defence companies are efficient in producing armaments. The Sweden's defence industry has the potential to be a stepping stone for a successful defence transformation.

Based on the cases of Japan and Sweden, second tier arms producers could apply two strategies to remain profitable. First, following Japanese defence companies' footsteps by maintaining large proportion of non-arms and dual-use technology sales. In the case of Japan, this strategy has managed to keep Japanese defence firms profitable. Such a strategy, however, can make those companies put half-hearted efforts in developing their arms sales division as it does not contribute significantly to their total income. Second,

giving up autarky and establishing independent political relations with first tier arms manufacturers could be another strategy to remain effective, as in the case of Sweden. By giving up autarky and embracing international collaboration Sweden was able to ensure its defence industry's survivability. Sweden, moreover, has wide room for maneuver within arms sales thanks to the absence of significant political dependency. As the arms trade is closely associated with politics, first tier defence manufacturers foresee second tier producers as being potential obstacles for their political objectives since the latter can be alternative providers and Japan and Sweden provide examples of how to be somewhat successful in this environment.

Notes

1）For example, Lockheed Corporation and Martin Marietta, both American aerospace companies, merged into Lockheed Martin in 1995, Boeing and McDonnell Douglas in 1997, and the fusion of UK's Marconi Electric Systems and British Aerospace into BAE Systems in 1999 (Bitzinger, 2009, p. 5).

2）Likewise, J. Paul Dunne noted that future prospects for defence industry are shaped by several factors. First, the changing nature of warfare; second, the rate of obsolescence of some major weapon systems; third, the new security environment and its demands for new types of military missions; fourth, the new technologies introduced as a result of the war on terrorism; fifth the degree of outsourcing of services from the military sector (Dunne, 2009, p. 30).

3）The name of the company has been changed to PT DI (*PT Dirgantara Indonesia,* Indonesian Aerospace Company) since 2000.

References

Amir, S. (2007). Nationalist Rhetoric and Technological Development: The Indonesian Aircraft Industry in the New Order Regime. *Technology in Society, 29*, 283-293.

Ando, S. (2015). Empirical Analysis of the Defence Interdependence Between Japan and the United States. *Defence and Peace Economics, 26*(2), 223-231.

Arnett, E. (1998). Norms and Nuclear Proliferation: Sweden's Lessons for Assessing Iran. *The Nonproliferation Review*.

Ball, D. (1993-94). Arms and Affluence: Military Acquisitions in the Asia Pacific Region. *International Security, 18*(3).

Bitzinger, R. (2003). Towards a Brave New Arms Industry. *Adelphi Paper, 356*.

Bitzinger, R. (2009). Introduction: Challenges Facing the Global Arms Industry in the 21st Century. In R. Bitzinger, *The Modern Defense Industry: Political, Economic and Technological Issues*. Praeger International.

Bitzinger, R. (2009). The European Defence Industry in the 21st Century: Challenges and Responses. In R. Bitzinger, *The Modern Defense Industry: Political Economic and Technological Issues*. Praeger International.

Bitzinger, R. (2015, November). New Ways of Thinking about the Global Arms Industry: Dealing with Limited Autarky. *Aspi Strategic Insights, 98*.

Bitzinger, R. (2016a, April 6). The X-2 ADT-X: Japan's Last Chance Jet Fighter. *RSIS Commentary*(7).

Bitzinger, R. (2016b, May 27). Japan's Disappointing Entree into the Global Arms Market. *RSIS Commentary*.

Bitzinger, R., Raska, M., Koh, C. S., & Wong, K. K. (2014). Locating China's Place in the Global Defence Economy. In T. M. Cheung, *Forging China's Military Might.* Baltimore: John Hopkins University Press.

Boutin, J. K. (2009). Emerging Defence Industries: Prospects and Implications. In R. Bitzinger, *The Modern Defense Industry: Political, Economic and Technological Issues.* Praeger International.

Cervera, R. C. (2012). The Impact of Economic Crisis on Defence Policies: A Comparative Study. *Journal of the Higher School of National Studies, 0*, 31-44.

Connaughton, R. (2004). *Rising Sun and Tumbling Bear: Russia's War with Japan.* London: Orion Books.

Dombrowski, P., & Gholz, E. (2006). *Buying Military transformation: Technological Innovation and the Defense Industry.* New York: Columbia University Press.

Dunne, J. P. (2009). Developments in the Global Arms Industry from the End of the Cold War to the mid-2000s. In R. Bitzinger, *The Modern Defense Industry: Political, Economic and Technological Issues.* Praeger International.

Edgar, A. D., & Haglund, D. G. (1993). Japanese Defense Industrialisation. In R. Matthews, & K. Matsuyama, *Japan's Military Renaissance?* London: Macmillan Press.

Europarl. (2011, April). *The Impact of the Financial Crisis on European Defence*. Retrieved January 11, 2015, from Europarl: http://www.europarl.europa.eu/document/activities/cont/201106/20110623ATT22406/20110623ATT22406EN.pdf

Fackler, M. (2014, April 1). *Japan Ends Decades-Long Ban on Exports of Weapons*. Retrieved from New York Times: http://www.nytimes.com/2014/04/02/world/asia/japan-ends-half-century-ban-on-weapons-exports.html?_r=0

Gady, F.-S. (2016, April 27). *Why Japan Lost the Bid to Build Australia's New Subs*. Retrieved from The Diplomat: http://thediplomat.com/2016/04/why-japan-lost-the-bid-to-build-australias-new-subs/

Guardian. (2007, November 29). *Japan Defence Ministry Raided in Briber Scandal*. Retrieved from The Guardian: https://www.theguardian.com/world/2007/nov/29/japan.justinmccurry

Hagelin, B. (2010). From Certainty to Uncertainty: Sweden's Armament Policy in Transition. In S. Markowski, P. Hall, & R. Wylie, *Defence Procurement and Industrial Policy: A Small Country Perspective.* London and New York: Routledge.

Hughes, C. W. (2009). Japan's Remilitarisation. *Adelphi Paper*.

Ikegami-Anderson, M. (1998). Japan. In R. P. Singh, *Arms Procurement Decision Making, Volume I: China, India, Israel, Japan, South Korea and Thailand.* Oxford and New York: Oxford University Press.

Kennedy, P. (1989). *The Rise and Fall of Great Powers.* London: Fontana.

Lorell, M. A. (1996). *Troubled Partnership: A History of U.S. - Japan Collaboration on the Fs-X Fighter.* New Jersey: Rand.

Matthews, R. (2002, March/April). Asia-Pacific's Revolution in Business Affairs. *Asia-Pacific Defence Reporter*.

MOFA. (n.d.). *Japan's Policies on the Control of Arms Exports*. Retrieved from MOFA: http://www.mofa.go.jp/policy/un/disarmament/policy/

Morimoto, S. (2008). *Reconsideration on Japan's Defence Policy.* Tokyo: Kairyuska.

Pollmann, M. (2015, January 15). *Japan's First Steps Into the World of Arms Exports.* Retrieved from The Diplomat: http://thediplomat.com/2015/01/japans-first-steps-into-the-world-of-arms-exports/

Safitri, C. M. (2016). *Contribution of Offset to Defence Industrialisation in Indonesia (PhD Thesis).* Cranfield: Cranfield University. Retrieved from https://dspace.lib.cranfield.ac.uk/bitstream/1826/10263/1/Savitri%20PhD%20Thesis.pdf

Samuels, R. J. (1994). *Rich Nation, Strong Army: National Security and the Technological Transformation of Japan.* Ithaca and London: Cornell University Press.

Sebata, T. (2010). *Japan's Defense Policy and Bureaucratic Politics 1976-2007.* Maryland: University Press of America.

Simpson, J. (2016, May 6). *Why Doesn't Australia Want Japan's Submarines? (Some of Best in the World)*. Retrieved from The National Interest: http://nationalinterest.org/blog/the-buzz/why-doesnt-australia-want-japans-submarines-some-best-the-16100?page=2

SIPRI. (2011). *SIPRI Yearbook 2011: Armaments, Disarmament and International Security.* Oxford and New York: Oxford University Press.

Tang, S. M. (2013). ASEAN-Japan Defence Cooperation: Overcoming History and Charting New Possibilities. In R. Sukma, & Y. Soeya, *Beyond 2015 ASEAN-Japan Strategic Partnership for Democracy, Peace and Prosperity in Southeast Asia.* Tokyo: JCIE.

Taylor, T. (1993). Japan's Policy on Arms Exports. In R. Matthews, & K. Matsuyama, *Japan's Military Renaissance?* London: Macmillan Press.

Watanabe, A. (1993). Japan's Postwar Constitution and Its Implications for Defence Policy: A Fresh Interpretation. In R. Matthews, & K. Matsuyama, *Japan's Military Renaissance?* London: Macmillan Press.

Williams, B. (2010). Japan's Arms Procurement After the Cold War. In A. T. Tan, *The Global Arms Trade: A Handbook.* London and New York: Routledge.

WSJ. (1998, November 20). *Japan's Defense Agency Head Quits After Corruption Probe Finds Coverup*. Retrieved from The Wall Street Journal: http://www.wsj.com/articles/SB9115420559572000

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